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EDITORIAL NOTES

FURTHER A.M.C. PLANNING

WE referred in our issue of Jan. 5 to an interim report on Post-War Planning of the Gas Industry by a sub-committee appointed by a special committee of the Association of Municipal Corporations. Now, after a lengthy period during which the storm-tossed ship Gas Industry Reconstruction had to all outward appearance become utterly becalmed, the A.M.C. have sent a ripple across the waters by the publication of a "further" report by their sub-committee. The calm to which we have referred was due no doubt in part to the fact that the Ministry of Fuel and Power had announced in June the formation of its Committee of Enquiry, for which, though little publicity has been given to it and its intentions, various sections (even, we fear, factions) of the Industry have presumably been busily preparing evidence. A period of calm, moreover, will not have been unwelcome to those who from choice or out of a sense of duty have had added to their normal function of making and distributing gas the task of shaping a future policy. Indeed, it is a natural reaction to the endless and wearying disputations of recent years. Then, too, there has been the impact of the climax of mighty world events, which has naturally tended temporarily to distract attention from, and diminish interest in, the internal affairs of the Gas Industry.

It is no doubt due to the last cause that the A.M.C. report has received a smaller measure of publicity than it would otherwise have had, and we believe that its publication in our columns will interest many readers. As to the recommendations themselves, they appear to us to speak for themselves, and as the merits of nationalization, municipalization, and private enterprise will no doubt be argued fully before the Committee of Enquiry, it seems superfluous for us to enter into a detailed discussion of them at this stage. We are not, however, in the least surprised that the Association of Municipal Corporations is strongly in favour of municipalization, with gas boards to deal with difficult cases where municipal boundaries and economic gas supply limits are irreconcilable. This is part of the Association's general policy by which public utilities of all kinds "should, as a general statement, be owned and controlled by the public through the democratic forms of local government." As regards any short-term policy, this principle would seem to place the Association in something of a difficulty, since they themselves have outstanding a report on the reorganization of local government in general, and they regard the present structure as in urgent need of reform. Yet, so strongly do they adhere to their principle that, although they visualize a necessary transition period in which, while awaiting the Utopia of universal municipalization, a great deal can be achieved to remove the existing defects in the Gas Industry by well-planned and controlled integration and co-operation between gas undertakings, yet "in no case should a local authority undertaking be transferred to a company."

In many respects the report is more moderate than reports are liable to be when hidebound by an over-riding policy, and it clearly visualizes that no sudden and drastic upheaval could be put into effect without interfering with one of the necessities of modern life. Without, however, being very deeply versed in the ramifications of local politics, we take leave to doubt whether the recommendations will appeal much more strongly to some of the more vigorous and efficient small municipalities which own gas undertakings than they will to the out-and-out partisan of private enterprise. The general argument in favour of public ownership is based upon the familiar assumption that private enterprise, although seeking a profit for itself, can afford any less than a municipality to be "fully responsive to public opinion and the needs of all classes of consumer." Actually, no body of shareholders has ever been so hedged about by restrictive legislation as those who have invested in the Gas Industry, and we believe that any defects in gas service from which the consumer has suffered in the past have been due just as much to legislative cramping of the capitalist's enterprise as to his depredatory instincts. In the final count, the needs of all classes of consumer will be best served by giving the greatest possible measure of freedom to those who really understand the business of gas manufacture and supply, whether the local worthies co-operate with and support them in the shape of a municipal gas committee or a board of directors. This, however, presupposes that, whether it be committee or board, terms and status offered are of such a nature as to attract men who really do understand this somewhat intricate business, which in the past has by no means always been the case.

RECRUITMENT OF PERSONNEL

LAST week we commented on what appeared to us to be a more cheerful note in the Report of the Examiners on this year's examinations of The Institution of Gas Engineers. That report did not include the detailed reports of the Examiners in Gasfitting—an omission which one of the Co-Chief Examiners, Mr. R. N. Le Fevre, finds himself at a loss to understand. However, the omission is rectified by a letter from Mr. Le Fevre which will be found on p. 271, and to which we would call especial attention. The report on the 1944 gasfitting examination is stygian, it calls for the light of day, and it demands a remedy to a most unhealthy state of affairs. Mr. Le Fevre does not mince matters, and what he has to say, if unalloyed in its gloom, is really most constructive. As he rightly remarks, to take our part in the provision of good service in the millions of new and re-conditioned homes that are being contemplated, we shall need intelligent workmen and craftsmanship of the highest order. And what, in general, are we doing to recruit such personnel? If the report is a guide—and we think it is clear indication—we are for the most part doing little if anything about it, complacently watching the entry of candidates the majority of whom are illiterate throw-outs from the schools and the Labour Exchanges, youngsters who come into the Gas Industry as a last resort, youngsters without enthusiasm or ambition, raw material of the most unpromising kind. It is all very disconcerting, the while the remedy is in the Industry's own hands. Elementary and Junior Technical Schools must be well informed of the careers available in the operative ranks of the Industry, and suitable selection tests should be given to candidates to ensure that those selected will not be square pegs in round holes but will possess mechanical aptitude, an adequate intelligence level, and sufficient knowledge to enable their training to be effective. Mr. Le Fevre's forthright and pungent letter is a clarion call for immediate action.

TOWARDS UNITY?

WE take it that those who voluntarily enlist in the ranks of the staffs of gas undertakings do so with their eyes open and with the object of preserving their health. It is widely enough known that the qualifications asked for are not immeasurably high. We ourselves have yet to find—we are thinking in terms of normal conditions, not wartime exigency—overworked gas staffs. It has never struck us, for example, that a gas showroom represented a sweated-labour emporium; its conduct was, of course, polite, but its tempo little removed from *andante*. In general, a member of a gas staff acted at any rate

outwardly on the safety principle, whatever his reckless inner thoughts. We cast no censure, but we think he worked according to the clock—again we speak generally.

Lately in our correspondence columns we have published several letters on the subject of "gas staff organization," which we presume is a euphemism for "gas staff rights." The letters we have published refer specifically to the London district, but we gather that the idea is to build up from London a national organization with regional components, everything essentially (*vide* this page) "democratic." The expressed aim is "unity for strength," but what do we see? Anything approaching unity even within the London district itself? On the one hand there appears to be a Gas Light, Hornsey, and North Middlesex combination for strength. On the other hand (a hand if not wearing knuckle-dusters, at least a padded boxing glove) we have the Croydon, Lea Bridge, Tottenham, and Wandsworth group. Each association, we would emphasize, aiming at unity. We realize that the "London district" is not of mean size, but surely it is the meaner in this matter of staff organization without the inclusion of the "South Metropolitan" and all that term may convey.

We should not like the impression to be gained from these few passing thoughts that we are in the slightest degree opposed to the formation of gas staff organizations or are out of sympathy with their aims and objects. Indeed, every move to foster co-operation between employing bodies and employees with a view to the increased efficiency of public service is to be encouraged, and should be welcomed alike by management and staff. Effective negotiation, as a correspondent points out in a letter on a later page, is possible only when goodwill exists between management and staff; and goodwill locally, regionally, and nationally between employer and employee is needful to harmony within and the full advancement of any industry, the Gas Industry being no exception. But it would seem from the correspondence we have lately published on the establishment and functioning of gas staff associations that there is a long way to go before unity among themselves can justly be claimed. Achievement of such unity doubtless presents a difficult and complicated task, but the obstacles should not prove insuperable, and internal unity is surely an essential first step towards the co-operation envisaged and the enhanced status of gas staffs which is generally desired.

Personal

Mr. JOHN KEILLOR, formerly Gas Engineer and now retired, has been made an honorary life member of the Canadian Gas Association, and has been re-appointed Chairman of the Gas Standards Committee. At the recent convention of the Association in Hamilton, he was *in absentia* presented with a gold-banded and engraved ebony cane and a silver-framed engrossed token of appreciation.

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We regret the obvious error in the personal note last week on Mr. WILLIAM T. LANE, by which we stated that he was at Oxford in 1939. His appointment to that Company was made in 1898.

Obituary

The death took place suddenly at business on Aug. 21 of Mr. ALEXANDER COCKBURN, Works Manager of the Falkirk Works of Messrs. R. & A. Main, Ltd. Deceased, who was well known throughout the trade, had been with the firm for over 40 years, and his loss will be keenly felt.

* * *

The death has taken place of Mrs. T. SETTLE, widow of the late T. SETTLE, who did so much pioneer work on the carbonization of coal in vertical retorts and was the originator of the Settle-Padfield process.

Inventor of New Fire Bomb

The announcement was made last Thursday that the Livesey Professor, Dr. D. T. A. Townend, and his co-workers were responsible for the invention of Britain's devastating fire bomb. Bombs of this type, which depend on methane dissolved in petrol under pressure, weigh 30 lb., and have been dropped on Germany during the past six months by the R.A.F. with excellent results. Dr. E. C. W. Smith and Dr. J. S. Forsyth have been associated with Professor Townend in this work.

Letters to the Editor

Gas Staff Organization

DEAR SIR,—The question of gas staff organization has received the attention of both managements and staffs in the London District during the past year. The war has stressed the general need of organization and co-operation within the Gas Industry, so that necessity has at last focused attention upon that important partner—the gas staff worker.

Certain gas staffs have always been alive to the good results obtainable by association, but unfortunately little headway was made prior to the war. It was gratifying, therefore, to learn that the Gas Employers' Federation had approached the National Association of Local Government Officers in 1943, enquiring if that Association could amend its constitution to include the recruitment of the gas staffs of private companies. (The National Association of Local Government Officers has since decided that this is not possible.) At the same time the staffs of certain companies were approached by the employers to set up some form of organization capable of effecting binding agreements with regard to general working conditions, salaries, &c.

Previous attempts at organization had shown that only a free external organization could effectively express the views and adequately protect the interest of the gas staffs. With the acceptance of this fundamental principle, a Committee was set up in the London District to draft a Constitution for a suitable organization. After several months of deliberations the type of organization recommended was—the Gas Staff Association.

The Constitution of the Gas Staff Association was accepted by the majority votes of the staffs of the Commercial Gas Company, the Gas Light and Coke Company, the Hornsey Gas Company, and the North Middlesex Gas Company.

The objects of the Association are:

(*a*) To protect and promote the interests of its members, and to adopt such procedure as may from time to time be deemed necessary or desirable for regulating the relations between members and their employers.

(*b*) To secure the greatest measure of co-operation between the employing bodies and the Association in matters affecting the Industry, with a view to the increased efficiency of the public service.

(*c*) To maintain and improve the relationship between managements and staffs, for the general well-being of the Industry.

(*d*) To raise the professional status of gas staffs, and to obtain recognition of the Gas Staff Association as the official organization representative of all grades of the staffs of gas undertakings, both by the employing bodies and by appropriate Government Departments, and as such to be consulted and to advise on all matters affecting the duties and general interest of staffs employed in the Gas Industry.

(*e*) To safeguard the interests of staffs of gas undertakings affected by amalgamations, alliances, fusions, or other changes of working arrangements.

Membership of the Association is open to all members of the administrative, clerical, professional, supervisory, and technical staffs of the Gas Industry, and all superannuated members of such staffs.

Other important points of the Constitution are:

(1) The Association is governed by a democratically elected Council with full executive powers with individual membership through local branches.

(2) Any number of staff employees of any gas undertaking or group of undertakings may form a Branch.

(3) Branches are encouraged in the first instance to negotiate with their own management on local affairs.

(4) The Association is to be built up both regionally and nationally, and so should appeal to all staffs throughout the Industry.

"The Conditions of Employment and National Arbitration Order, 1940," made clear that the Government desired that industry should provide negotiation machinery, first locally, then, as a next step, regionally, and ultimately to national arbitration.

The constitution of the Gas Staff Association is designed to meet the above conditions of negotiation, and its organization follows these lines. In this we follow in the steps of the overwhelming majority of organized staffs of similar status. The National Association of Local Government Officers, the Bank Officers' Guild, the Civil Service Clerical Association, the Railway Clerks' Association are examples of these unified national organizations catering solely for all grades of staff. Experience has proved that loose federations of small constituent bodies do not possess either the unity of purpose or the necessary dynamic action to meet all the demands of modern industrial society.

It has been said that the Gas Industry is "one and indivisible." This applies equally to gas staffs. In the days ahead demands will be made upon the *Industry*. The future of the Gas Industry will be at stake, and individual companies can and must subordinate themselves and become unified in maintaining and improving our industrial position.

The formation and the development of a national association is an important and comparatively difficult task. The foundations are now secure, so that the building-up can be resolutely tackled. The Gas Staff Association is alive to the necessity of advertising its wares to the Industry, and is aware of the responsibilities and duties and the

pitfalls which face a national organization. Slowly but surely the Gas Staff Association is equipping itself to play its part in the post-war years. No organization, save that which caters wholly for gas staffs, can adequately represent these staffs. Gas staffs unified into a single organization and speaking with one voice will be well prepared for post-war reconstruction.

The Gas Staff Association opens its ranks to all gas staff workers throughout the Industry. It is a democratic organization controlled by majority vote, and the principle that the minority should acquiesce reasonably with the majority. Gas staffs are still in different stages of organizational evolution, but the Gas Staff Association can and must attune its policy so that all may be brought into alignment at the earliest possible moment. We aspire to voice the individual hopes and aspirations of gas staffs, and to state their collective views with regard to every question affecting the Gas Industry.

The first object of an industrial association is to maintain and improve the economic conditions of its members; this can best be done by negotiation. Effective negotiation is only possible when goodwill exists between management and staff. Goodwill locally, regionally, and nationally between employer and employee is imperative if our Industry is to maintain and improve its industrial position.

The Constitution of the Gas Staff Association has been accepted by the Gas Employers' Federation (London District), and the Association is now active in the London Region. It now gives a call to all individual staff members of gas companies and to gas staffs generally to join the national organization. Here is the opportunity of uniting gas staffs, and of fostering a general goodwill without which the best laid (post-war) plans of mice and men gang oft agley.

Any further information will be gladly given on enquiry at the Association's temporary address.

The Gas Staff Association, H. J. ARNOLD,
36, *Parkthorne Drive,* Secretary.
North Harrow, Middlesex.
Aug. 23, 1944.

Recruitment of Personnel

DEAR SIR,—I was particularly interested in the Leader in your issue of August 23, and to note that, for the first time in many years, the Institution's Examiners have introduced a more cheerful note in their report. I submit, however, that this is not strictly true for, on turning to the actual report I notice it says, "The detailed reports of the Examiners . . . in Gasfitting are not yet available."

Why these reports are not available I am at a loss to understand as they were submitted on May 31—which I presume was long before those for the Major Course Examinations.

As one of the Co-Chief Examiners in Gasfitting I was responsible, this year, for the Grade 1 Examination and, as it would seem that there is a possibility of my Report being overlooked, I am taking this opportunity of asking you to publish it.

The report reads as follows:

EXAMINER'S REPORT ON GRADE 1.

GASFITTING EXAMINATION, 1944.

The paper was approved by the Board of Assessors of The Institution of Gas Engineers. In spite of its being one of the simplest papers as yet set in this grade, the results are the worst I have ever seen.

Apart from the lack of knowledge on the subject, the majority of candidates appeared to be illiterate. The standard of general education and intelligence was so low that few, if any, of these candidates should have been recruited for the trade of gasfitting or, if they were, they should have been given two years' continued education in basic subjects before being allowed to embark on a technical course.

I recommend that The Institution of Gas Engineers be asked to call the attention of the managements of gas undertakings to the poor type of lad they appear recently to have recruited.

Since the future of the service rendered by the Gas Industry will ultimately depend on the work of these lads, it would be desirable for The Institution of Gas Engineers to give guidance nationally on the problem of personnel recruitment and training.

The crux of the Report is contained in the final paragraph. We in the Gas Industry are about to face what will be undoubtedly the most critical period of our history. In order to take our part in the provision of good service in the millions of new and reconditioned homes that are being contemplated, we shall need intelligent workmen and craftsmanship of the highest order. And the lads from 14 to 16 years of age we are now engaging will be the men who will eventually be called upon to shoulder this responsible burden.

It appears that, generally speaking, the methods of recruitment in some gas undertakings are casual and haphazard. A couple of lads are wanted, so the district foreman or someone rings up the local Labour Exchange or speaks to the local headmaster, and the two duds who cannot be placed in any better job are—as a last resort—sent round to the gas-works.

As one who has spent a great deal of time and given considerable thought to the problems of recruitment and training I suggest that there is a two-fold solution:

(1) Elementary and junior technical schools must be well informed of the careers available in the operative ranks of industry.

(2) Suitable selection tests must be given to candidates to ensure that those selected will not be square pegs in round holes, but will possess mechanical aptitude, a suitable intelligence quotient, and sufficient knowledge to enable their training to be effective.

This is not destructive criticism, but a genuine desire to be helpful and, if there are any gas managers who would like more detailed information on methods of selection of potential gasfitters, I should, through your columns, be pleased to supply the information.

Watson House, Yours faithfully,
S.W. 6. R. N. LE FEVRE.
Aug. 24, 1944.

Complete Gasification

DEAR SIR,—Mr. Helps' claim that coke is sold at a loss could be valid only if the costs incurred on coke after leaving the retorts exceeded his estimate of 37s. per ton gross revenue. Since this is not the case the sale of coke recovers some net revenue towards meeting the total costs of operation of the gas undertaking. By giving up the production of coke for sale, this net revenue would be lost. The public demand now satisfied by gas-works coke, estimated at 5–10% of the total national demand for heat, would presumably have to depend upon coal. It would not be transferred to gas at 8d. per therm. Who then will buy the additional gas which Mr. Helps' figures suggest will expand our present gas output to threefold?

The fact is that the prices of our products and the proportions in which they are produced are really determined by the public in the exercise of its freedom to buy or otherwise. We have been able to sell all the coke we have made available and all the gas we have produced, together with surplus gas from coke ovens. There is no evidence of a huge unsatisfied demand for gas at ordinary flat rate prices. But for gas at lower prices there is evidence both of additional demand and of the ability even of the conventional technique to supply. If the future holds this promise of an expanding demand for gas, the question which requires continuing examination is whether coke or coal is the cheaper material from which to produce the gas, and by what methods. Expenditure on the preparation and marketing of coke in relation to the price obtainable is one factor, expenditure on distribution, appliances, and service if the characteristics of the gas are altered is another.

The development policy of the Gas Industry must be based on the public demand. Before the war an annual demand was met for some 1,500 million therms of gas at about £55 million and some 8½ million tons of gas-works coke at about £15 million. If the public will buy more of either or both at prices which recover the costs involved, it is the duty of the Gas Industry to supply. If the Government introduced widespread legislation against smoke, the demand for coke might dictate changes in normal gas-works operation. If, on the other hand, as appears more likely, an economic method of charge for gas can be popularized, the demand for gas would dictate the provision of additional plant, and the familiar merits and demerits of the process Mr. Helps advocates will no doubt be duly compared with other alternatives.

May one without disrespect suggest that Mr. Helps has allowed his proper zeal for evolution and progress to become so exaggerated as to confuse us all in our attempts to clarify and pursue our appropriate objectives.

Wimbledon, Yours faithfully,
Aug. 25, 1944. C. A. MASTERMAN.

Diary

Sept. 1.—B.G.F. Domestic Heat Services Committee: Gas Industry House, 2.30 p.m.

Sept. 8.—North British Association of Gas Managers: Annual Meeting, Edinburgh.

Sept. 12.—N.G.C. Central Executive Board, Lord Mayor of Leicester's Rooms at Hastings Street, Leicester, 1.30 p.m.

Sept. 12.—B.G.F. Council, Leicester, following meeting of N.G.C. C.E.B.

Sept. 18.—London and Counties Coke Association: Finance Committee 11 a.m., Executive Committee 11.30 a.m., Central Committee 1.30 p.m., Gas Industry House.

Oct. 11.—Southern Association of Gas Engineers and Managers: General Committee, 11.30 a.m.; Autumn Meeting, 2.30 p.m.; Grosvenor House, Park Lane, London.

Oct. 27.—Manchester District Association of Gas Engineers: Autumn General Meeting.

Dividend

Plymouth and Stonehouse.—Interest on Debenture Stock for the half-year to Sept. 30 next, at the rate of 3% per annum on the 3% stock; 3½% on the 3½%; 4% on the 4%; and 5% on the 5%; less income tax at 10s. in the £. For transferees to receive this interest, transfers must be lodged with the Company by 5.30 p.m. on Sept. 11.

Manchester District Association

The President's Day of the Manchester District Association of Gas Engineers was celebrated on July 7 at Leeds, and was inaugurated by a Luncheon at the Griffin Hotel, at which the members attended by invitation of the Chairman (Mr. Frederick Green) and Directors of the Mirfield Gas Company. The President of the Association, Mr. Norman Hudson, presided over a large attendance.

At the conclusion of the luncheon proceedings (a report of which appeared in the "JOURNAL" of July 19) the members assembled in the Leeds University, where three Addresses were delivered.

The **President** remarked that in his Presidential Address he referred to the fact that some experimental work was contemplated in regard to the liquid purification and catalytic removal of sulphur compounds. At that time the necessary plant was in process of erection, and therefore if a visit had been paid to the Mirfield Gas-Works there would have been very little that was new to be seen. There was, however, every hope that before the termination of his Presidential year of office the plant would be in full operation, and could probably be inspected about March, 1945. Having regard to these circumstances, he had approached Professor Townend, as he was aware there was some very interesting research work being carried out at the University which was particularly applicable to the Gas Industry. With his customary willingness, Professor Townend consented to organize an afternoon's meeting for the purpose of describing the results which had been achieved. It was decided that items of most interest would be such as were of practical application to the requirements of the Gas Industry in the near future. Therefore Dr. H. Hollings, the Chairman of the Joint Research Committee of the Gas Research Board and Leeds University had been invited to address the meeting on the work of the Committee, Mr. D. C. Gunn, M.Sc., would speak upon "The Use of Permeable Refractories for Furnace Construction," and Dr. A. L. Roberts, Lecturer in Refractory Materials in the University ot Leeds, would refer to the subject of "Radiant Heating."

As the afternoon's proceedings had really been arranged by Professor Townend he wished to record his appreciation of all the help he had given, for without his assistance very little could have been done in the matter.

Professor **D. T. A. Townend**, in introducing the lecturers to the members, said that at the Leeds University they always entertained a very warm and friendly feeling towards the Manchester District Association of Gas Engineers. He recalled that he had only been engaged for a few weeks upon his duties at the University when he was invited to one of their meetings at Manchester. They had an exceptionally fine teaching staff at the University, and the staff of the Gas Research Department were of outstanding calibre in their own particular avenues of research work. New degree courses had been established, and thanks very largely to the assistance received from the Industry itself the necessary equipment for further investigation was being installed. It was, of course, difficult to obtain this equipment during the war period, but it was hoped very soon to have such an amount of plant available as would be sufficient for the taking of an engineering course. The three addresses which would be delivered during the course of the afternoon would be given by speakers who had been actively engaged in the early stages of research work, and now, owing to their efforts, it could be stated that the results arrived at had passed from the ambit of research into the region of practical application.

The Joint Research Committee of the Gas Research Board and Leeds University

By Dr. H. HOLLINGS.

My terms of reference from your President are fairly precise, but, at the same time, they are very acceptable to me. I am to discuss in a few minutes and in very broad outline a question in which I have taken the greatest interest for many years—the general character of the research work carried out in this University under the aegis of the Joint Research Committee.

I need not give the history of this Committee for it has been told so often. It is a form of alliance between Industry and University which is unique both in its original conception more than a third of a century ago and in the continuity of its operation through the years. It is within my knowledge that at least one other University and at least one other industry have taken note of our very happy relationship, and have made similar arrangements. I believe that the advantages have been substantial and that they have been shared by both partners.

The Fuel Department of the University has been brought into closer touch with the Gas Industry as a result of this alliance, and so has been able to learn more intimately the general character of the Industry and its needs. I refer particularly to the long-term needs of the Industry in scientific personnel which may be satisfied by the various teaching courses within the University.

The Gas Industry has enjoyed the very substantial advantages that it has been able to bring its problems here and arrange for research to be carried out on most advantageous terms. There has been more than one occasion in the past when it has been of great value to the Industry to be able to secure an independent statement carrying with it the authority of a University Department. There is a further consideration that through the Livesey Professor and through the University representatives who have so freely given their services on the Joint Research Committee, it has been possible for the research workers to consult other departments of the University and to seek assistance in the solution of any particular problem which may have arisen. It would be difficult to estimate the value to a research worker of the facility to meet scientists in other fields in the atmosphere of the common room and the refectory. A further advantage has been the access to special apparatus owned by the University, and to the library.

On various occasions I have been amused by arguments as to whether this arrangement is more advantageous to the University or to the Gas Industry. Having had a foot in both camps, I think the Industry should be very careful not to underrate the very great benefits which it has received and which it is still receiving to-day.

The organization which stands to gain most from the accumulated goodwill asset of the Joint Research Committee is the Gas Research Board, and I think the new Director, Dr. King, is to be congratulated on his good fortune in finding that at least a part of the Gas Industry's programme of co-operative research is actually under way and proceeding so smoothly in the Department of the Livesey Professor. This should be a great help to the Council of the Gas Research Board and to the Director, in setting their minds free to broaden the field of research work as soon as circumstances permit. Here I would like to express a personal opinion that any further integration of our research efforts should be horizontal rather than vertical, that is to say, I believe the time is now more ripe for embarking upon what will be for the national organization entirely new fields of investigation, than it is for becoming more heavily committed to one or two of the lines of work which are proceeding so vigorously at Leeds.

There is one other general consideration which I would like to put before you. I think you should realize clearly what has been the practice of this Joint Research Committee in formulating its research programme. The Joint Committee only researches upon problems which are approved by the national body representative of the Industry. For many years it was the Institution; now it is the Gas Research Board. You will note that I am only speaking of the research carried on under the aegis of the Joint Research Committee. I am not, of course, referring to the general research programme of the Department, and still less am I referring to the teaching work of the Department. They are, and in my view should be, unfettered by any views held in the Industry, but the work which is carried out by the Joint Research Committee and for which the Gas Industry pays is that which we are asked to do by the Industry, and, therefore, I say to you that if by chance any of you are not satisfied with what we are doing, then you should first enquire whether the right programme has been referred to us. I am throwing out this challenge not because I think you will find any serious fault, but because I want to get you thinking about the proper programming of research. If you have any suggestions on the building up of a research programme, I hope you will let us have them on the Joint Research Committee or the Council of the Gas Research Board. If you have any criticisms to make, no one will welcome them more than the research workers themselves. I can assure you from personal knowledge that there are several research workers in the Industry to-day who are doing good work and who know that they are doing good work, and who are not without a very fair acknowledgment of what they are doing, but who are often very discouraged because their work attracts so little constructive criticism. They sometimes feel the need of something on which they can sharpen their own wits.

I said I was not going to deal with the history of this Joint Research Committee, but I would like to refer to one of the pieces of work which has now been completed, and which, on looking back, I think has been more important than is generally realized. I refer to the long series of patient investigations which were conceived by Professor Cobb and so ably carried out by Dr. Parker, now Director of Fuel Research, and by Dr. Dent. This work has as its main objective the establishment of what was the thermal efficiency of gas-making in carbonizing plant, particularly continuous vertical retorts, and in carburetted water gas plant. That work was started early in 1919 at a time when the Industry had very little factual knowledge which could be regarded as reliable and unbiased. The Industry had not even developed all the experimental technique which was necessary. The work which was done by the Joint Research Committee has served as a pattern for later work by others, and I think you should realize that no one is more gratified by such a state of affairs, and no one is more ready to retire and leave future development to others, than are the University representatives on the Joint Research Committee in such circumstances.

I refer to this particular piece of work in order to raise the general question whether in any other fields of gas technology you want fact-finding surveys, such as the investigation of gas-making efficiency to which I have referred, or purification and statistical studies. If so, do you want those surveys to be carried out by the University staff? Perhaps you will answer that the Industry itself has progressed during the 25 years since Dr. Parker started his work on the continuous vertical retort; that the Industry is now able to carry out that type of technical investigation itself, and that it would be more profitable if in the future the Joint Research Committee puts more emphasis upon longer range and more academic problems. We want to know what you think about it.

The **President** said the meeting was not really an occasion for discussion, but Dr. Hollings had certainly provided much food for thought, and it was desirable they should all make themselves *au fait* with the programming of the Gas Research Board. Perhaps further specific matters of research might be regarded as worthy of consideration, although, perhaps, at the present time it would be difficult to allocate the time necessary for the purpose.

Use of Permeable Refractories for Furnace Construction

By D. C. Gunn, M.Sc.

Collaboration between the University of Leeds and the Yorkshire Industrial Gas Development Centre resulted in the designing of a furnace with rather unusual and novel characteristics. The members of the Association are probably familiar with what is known as hot face insulation, or fireclay insulating material which is burnt with carbonaceous material included in it. On firing, the carbonaceous material burns out and leaves a porous structure, resulting in a brick possessing exceptional properties.

Those properties are low thermal conductivity and low thermal capacity, and they are of particular value when dealing with a furnace used for industrial purposes. Low thermal conductivity implies low heat required through the furnace structure; low thermal capacity implies little heat required to reach the furnace temperature.

In service, one disadvantage of this material was suggested to be permeability, or the possibility of passing a gas from one face of a material to another. Therefore it occurred to the research workers engaged upon this line of investigation that this disadvantage could be put to great advantage. In the case of a normal furnace, such as a carburizing furnace or an annealing furnace, the gases inside the

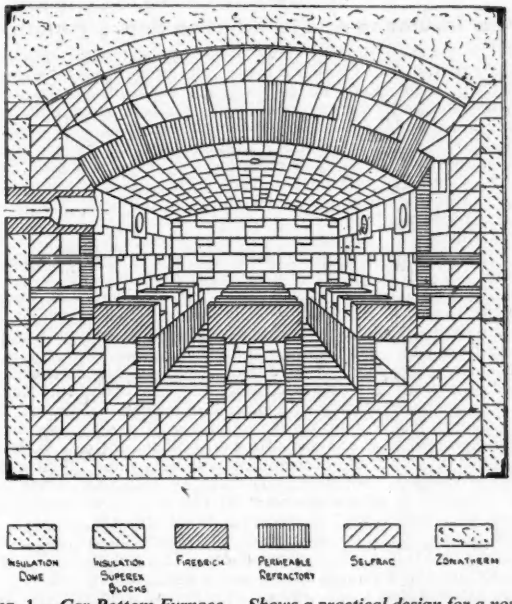


FIG. 1.—*Car Bottom Furnace. Shows a practical design for a normal furnace with gas and air blast. There is a permeable lining forming the arch of the furnace. There is also permeable firebrick for the walls. The permeable refractory is not mechanically strong; therefore it cannot be used for such parts as the hearth. A section of a furnace in actual production, measuring 7 ft. deep, 3 ft. 9 in. wide, and 22 in. by the arch. It is built in the open air. The performance has been extremely good and it can attain a working temperature of 900°C. in something less than 20 minutes (empty). After an all-night shut down the furnace drops to about 500°C., but the temperature can be re-attained in about 7 to 8 minutes. The load, weighing 1 ton or more, can be brought to temperature in less than an hour. Over a month's working on all loads, the average gas consumption per lb. of metal is 1.1 cu.ft.*

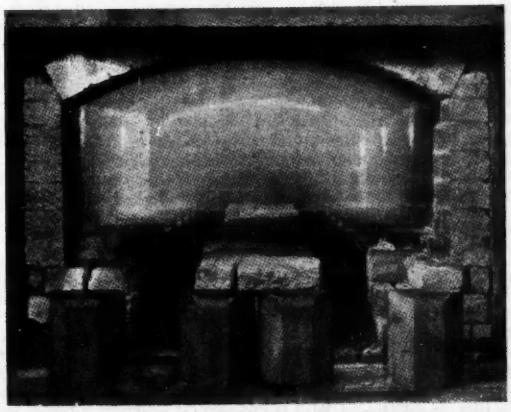


FIG. 3.—*Shows the furnace chamber. The photograph was taken a year after the furnace was first put into use.*

FIG. 2.—*Shows the front of the furnace. A typical load of cast steel wheels is being withdrawn after normalizing. The front end is in the open air, and the automatic control is enclosed in the case on the right.*

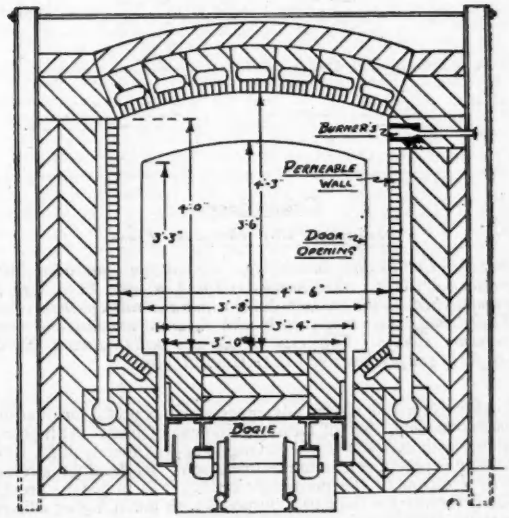


FIG. 4.—*A type of furnace used for annealing or heat treatment of heavy castings. The construction is somewhat different. The annulus is made in special blocks, designed by Mr. R. H. Anderson. Both car bottom and door on this furnace are permeable.*

furnace exist at a temperature in excess of the furnace wall temperature, otherwise the furnace could not receive heat from them.

If by suction on the outside of the furnace, or pressure on the inside of the furnace, they are made to pass through the wall, they will obviously leave the furnace at the same temperature as that of the wall. On their way out through the wall they are continuously in contact with the wall, and it can be shown that these gases, by reason of their excess temperature, can provide part of the heat losses from the furnace.

The research work was first carried out at Leeds University and later on at various works in the district. The effect of the permeable lining has been that a furnace working at something like 800°C. is capable of effecting a saving in fuel consumption of 15% to 20%. This saving is accompanied by an advantage which is useful for intermittent furnaces—namely, that of rapid attainment of heat. At higher temperatures such as 1,400°C. the saving is approximately 40%, while in addition it is practicable to use recuperation. By developing recuperation in addition to the permeable lining, it is hoped to produce a gas-fired furnace for industrial purposes with much higher efficiencies than those prevailing at the present time.

There are eight installations in use, all of which are functioning satisfactorily.

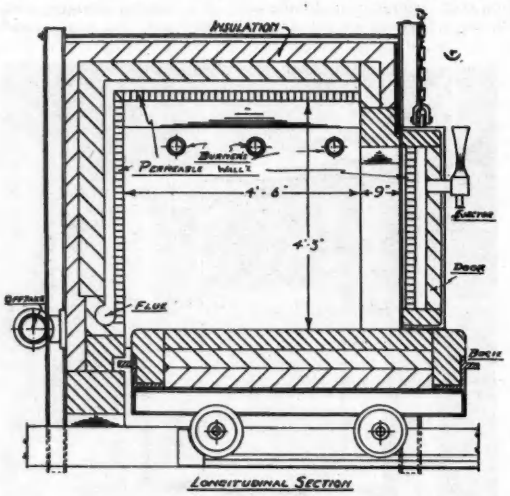


FIG. 5.—*Bogie Hearth Furnace, shows the permeable door.*

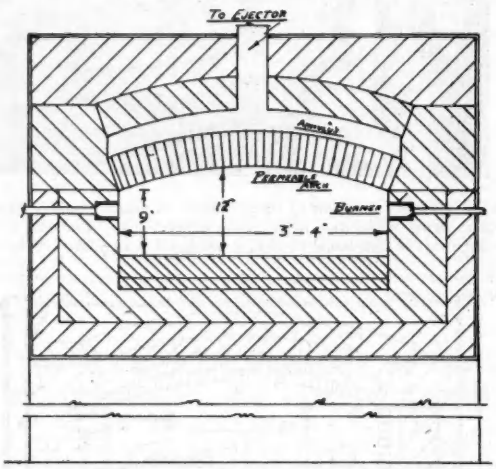


FIG. 6.—*Continuous furnace for normalizing controlled wire at approximately 700°C. The furnace is 3 ft. 4 in. wide, 12 in. high, 30 ft. long and arched, all the products being withdrawn through the arch, which is divided into three zones, each with separate exhaust and separate temperature control. This type of furnace will maintain 700°C. at 400 cu.ft. of gas per hour; 425 B.Th.U./cu.ft. gas.*

The **President** remarked that Yorkshire gas engineers were particularly interested in the work done by Mr. Gunn in regard to permeable linings. Mr. Gunn presented a problem to the Yorkshire Industrial Centre in the first place, because it was a novelty to them to be interested in patents covering more or less new fundamental designs. He had been particularly enthusiastic about his work, in the carrying out of which he had received full co-operation from Professor Townend and his staff at the University. This was a matter of great satisfaction to the Yorkshire Industrial Centre, and all its members had high hopes that the efficiencies of the various furnaces would be maintained in actual industrial practice. It was hoped that not merely Yorkshire but the whole of the country would soon be able to develop large gas loads for the greatly improved type of furnace which had been described.

(*The Address by Dr. A. L. Roberts will be published in next week's* "JOURNAL.")

Gas Cooking Research

(*Concluded from p. 242*)

Oven Insulation and its Effect on Range Performance

While the most obvious result of the application of insulation to gas range ovens is to produce lower exterior surface and room temperatures, oven speed and economy are both affected by it. Preliminary studies on several "loose" rock or mineral wools and "board" impregnated wools showed differences in their insulating values were due almost entirely to densities. Combinations of air space and solid insulation as well as shiny or reflecting surfaces were likewise investigated. Compared with mineral wool, such types were found to offer little advantage from a performance standpoint. Furthermore, investigations were therefore restricted to long fibre mineral wool of various densities. As this represents a product generally employed for range oven installation, resulting data are capable of direct application. In view of the use of a specially constructed test oven in this work, the performance secured may be considered as somewhat superior to that of which commercial ranges would be capable.

Considering insulation densities of 8 and 12 lb. per cu.ft. in thicknesses from 1 to 3 in., little gain in preheating speed was secured with thicknesses above 1½ in. Use of thicknesses over 2 in. reduced heating speed on account of the increased amount of heat absorbed. Maintaining rates decreased slightly with increase of insulation densities. This is significant in that it indicates the advantage of using insulation sufficiently compact so as to avoid sifting or settling. Increase in thickness of insulation materially decreased maintaining rates although not in direct proportion. By correlating extensive test data, it was shown that reduction in gas consumption by use of 1 in. of insulation was about 32%, while with 2 in. thickness it was only 43%.

Settling of insulation as a result of transportation and handling naturally results in a loss of effectiveness. This can readily be avoided by selection of a minimum density above which settling will not occur. From observations made, proper densities of insulation for use in columns of different heights to prevent settling can be stated. These vary with the material employed. For long fibre rock or mineral wool minimum densities varied from 8½ lb. per cu.ft. for a column 15 in. high to 11 lb. for one 35 in. high. Slightly lower values may be used for similar insulation of medium length fibre. For glass wool, densities were from 2½ to 3 lb. for all heights. These figures applied to from 1 to 3 in.

From the customer's standpoint, reduction in range surface temperatures as well as lowered kitchen temperatures represent major considerations. As insulation not only reduces heat losses to the oven wall, but flue loss as well, it is doubly important in reducing kitchen temperatures through reduction in the amount of heat liberated into the room. Surface temperatures, as would be expected, are reduced by increasing either the thickness or the density of the installation employed. Using a test oven maintained at 500°, an increase in thickness from 1 in. to 3 in. reduced the average weighted surface temperature above that of the room by about 30%. With thickness unchanged, effect of varying density was much less pronounced.

Closely allied with oven insulation is the question of reduction of heat losses occurring through metal-to-metal contacts. Using the experimental oven with all metal-to-metal contacts between inner and outer walls eliminated, it was possible to bring about a reduction of 36% at 500° oven temperature. An increase in insulation thickness more than any reasonable amount over that used on modern ranges would have been necessary to accomplish such a reduction in maintaining rate with former metal-to-metal contact maintained.

Grilling Speed and Temperatures

The most striking difference between griller and oven sections is the method of heat transfer utilized in the cooking process. Oven cooking is effected principally by convected heat and by radiation. Grilling, on the other hand, is accomplished mainly by direct radiation from flames, radiants, or metal surfaces, all of which are maintained at comparatively high temperatures. For this reason, special attention must be devoted to design and materials of construction to meet special conditions which these factors impose. It is also necessary to keep in mind that as contrasted with ovens several different types of grillers are in use. In the case of the most commonly used combination oven and griller, the same general relationships between excess air and

different constructional features previously described for ovens apply. Grillers separate from ovens present a considerably lower height of flue outlet above the burner. As effective draught is thus reduced, some modifications are necessary in the application of equation (1) formerly mentioned to give desired results.

Griller performance, so far as speed of preheating and fuel economy are concerned, was found to be improved by reduction in excess air with resultant lowered flue losses. Thickness and density of insulation also affected griller performance in much the same way as was the case with ovens. While use of more insulation accomplishes a reduction in heat loss through the exterior walls with attendant higher interior temperatures, a greater mass of insulation with its higher capacity for heat absorption tends to increase the time required for preheating. In addition to the factors mentioned, the use of radiants, type of flame, whether luminous or non-luminous, and input rate exert an important effect on griller speed and temperature. These features were thoroughy explored. For the measurement of temperatures special thermocouples were employed. Temperatures so determined were found to give a reliable and reasonably accurate indication of the effectiveness of the broiling operation.

Graphs given in the Paper show the comparative speeds and temperatures obtained in the same broiler section, equipped as indicated, with an atmospheric burner with or without radiants and with a luminous flame burner. Better performance was given by the yellow flame burner. Its use also resulted in much higher speed of heating as well as generally better heat distribution when approximately the same input rates were employed. Additional tests showed that with the range of normal grilling temperatures, assumed as between 600° and 700°, atmospheric burners required from 45 to 60% greater gas input than luminous flame burners to produce the same griller temperatures. Grilling of meat cakes by luminous and ordinary blue flame burners indicated better performance was obtained from yellow flames. By their use a moist tender product resulted up to temperatures where exterior charring took place. When blue flame burners were used, a definite crust was formed of about the same thickness at all temperatures employed. Shrinkage of meat was also greater with the blue flame burner.

Although these results favoured luminous flame burners for grilling, it must be kept in mind their successful application introduces some additional problems of aeration and baffling. Other tests also indicate that the better performance of luminous flame burners may have been caused not only by the greater radiation from the flames, but by their greater length and extent in respect to the griller rack. When blue flame burners with reduced port areas were employed, the gas input remaining constant, longer flames resulted which gave higher speeds and griller temperatures closely approximate those obtained with yellow flames.

Grilling tests using filet mignon 1 in. thick, as well as 3 in. diameter cakes of ground round steak of different thicknesses, demonstrated that quite similar grilling results would be obtained over a wide range of temperatures. While at lower temperatures a longer time was required to reach the same internal temperature or degree of "doneness" of the meat, little difference could be detected in its quality. It was also shown that for any given thickness of steak, a maximum grilling temperature existed which could not be exceeded without burning the outer surface of the meat before its interior was heated to the desired temperature. This temperature ranged between 140° and 150°. Permissible maximum broiling temperature was found to decrease as the thickness of the steak increased. For general grilling purposes, it appears that a satisfactory maximum temperature should be between 600° and 700°.

Gas Flow in Purifiers

Improved valve means for controlling the direction of flow of gas in purifiers of the type known as "trinity" valves—*i.e.*, having three valve controlled openings apart from a gas inlet or outlet opening according to the flow of the gas—is the object of patent No. 556,839 granted to H. H. Hollis. In this method of controlling the flow of gas it is usual to locate a pair of "trinity" valves within the purifier and connected to the inlet and outlet openings so that either valve may act as the inlet or outlet at will. The arrangement is such that gas may be admitted through one "trinity" valve to any one or more of the upper, lower, and intermediate zones of the purifier for passage through the oxide, to and out of any one or more of the valve openings of the other valve. All these constructions employ a hand wheel for operating each valve spindle direct. The patentee states that with valves so arranged their operation is made difficult, when considerable pressure on the seatings is required, due to the use of direct operating mechanism. The object of the present invention is to overcome this difficulty.

Three plate or disc valve members are arranged in conjunction in a casing on the outside of a purifier and each is adapted to close an opening communicating with the interior of the purifier, each of the valve members having gearing included in its operating mechanism so that the minimum manual effort is needed to apply the required valve pressure on the valve seatings. The gearing is so arranged that none of it is exposed to the gases flowing into or out of the purifier. The valve mechanism includes a screw threaded valve spindle capable of axial movement, and the arrangement is such that a comparatively short portion of the spindle is exposed to the gases and none of the operating screw threads and gearing.

Figs. 1 and 2 are respectively a part sectional elevation and a sectional plan view of an improved "trinity" valve fitted to a gas purifier. According to the patent a valve is built up comprising a casing 1 of rectangular (or other) cross sectional shape, which is detachably or otherwise secured vertically to the wall of a gas purifier 2 and forms a passage for gases flowing into or out of the purifier. A gas inlet from, or outlet to, the mains is provided at 3 in the casing which communicates with the purifier through three openings 4, having valve seatings 5, arranged respectively in communication with the upper, the intermediate, and lower zones of the purifier. Hoods 6 are provided for preventing the oxide 7 from fouling the gas openings.

A valve member 8—*e.g.*, a built-up or other valve disc with (or without) a resilient sealing washer 9—is arranged in the casing opposite each of the three openings 4 and has rollers 10 running on rails 11 for guide means. Each member is moved on to and off its seating 5

FIG. 1.

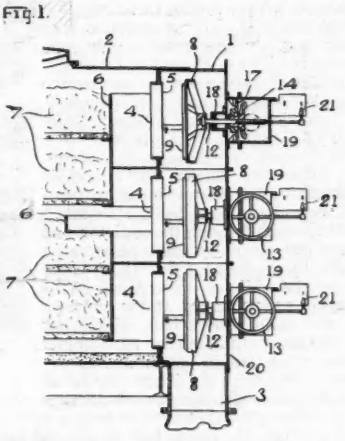
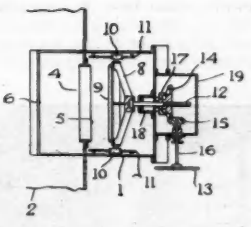


FIG. 2.



through the medium of a valve spindle 12, which is screw threaded at its outer end, and by a hand wheel 13 indirectly through gearing 14. The gearing comprises a bevel wheel 14 and pinion 15 (or worm and worm wheel) so that the hand wheel spindle 16 is at a right angle to the valve spindle 12. The valve spindle passes through the internally screw threaded boss of the bevel wheel 14, carried by a bearing 17, and preferably a gas sealing element 18 surrounds the spindle to prevent gas passing from the casing back along the spindle. The gearing is furnished with a removable housing or cover 19. The wall 20 of the casing 1 is also removable in sections to enable each of the valve members 8 and its mechanism to be removed easily from its operative position without dismantling the casing or valve parts. The valve seatings 5 may also be withdrawn when the wall 20 is removed.

The casing, instead of being secured vertically, may be at an angle on the wall of the purifier with the valve members working in a horizontal plane, but this arrangement may be modified. The handwheel spindles 16 are shown arranged horizontally but may be vertical or at an angle. Also ordinary gear wheels may replace the bevel gears. Indicator means 21 are furnished for showing at a glance the position of each valve member.

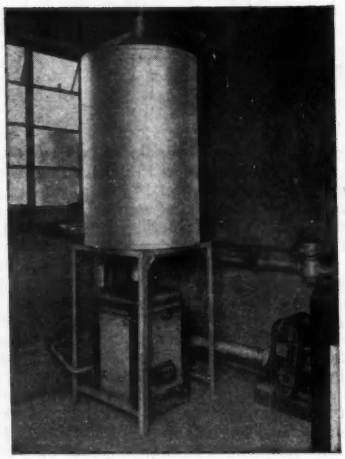
In the Absence from Newport of Mr. R. Wilson Bartlett, J.P. (Deputy Chairman), Mr. C. O. Lloyd, a Director, presided at Newport Gas Company's annual allotments, gardens, produce, and flower competitions at Crindau. He was accompanied by Mr. J. H. Canning, J.P. (Director), and Mrs. Canning, Mr. R. S. Snelling, J.P. (General Manager and Secretary), Mr. J. F. Rust (Engineer), Mrs. Rust, Mr. S. G. Meade, and Mr. W. E. Crowley. Mr. W. E. Mayne, F.R.H.S., reported on the allotments and gardens and said he had found crops above average. The year had not been favourable to the gardener, and extra attention had to be given which, with extra working hours, Civil Defence duties, and other activities, added to the burden of the allotment holder. Every credit was due to those who had worked produce to the perfection found on the Gas Company's plots.

A Central Heating and Hot Water Installation

WE recently had the opportunity of inspecting a comprehensive gas-fired central heating and hot-water installation in a new canteen brought into operation at the works at Uxbridge of the Bell Punch Company, Ltd. The canteen is exceedingly well proportioned and equipped and must, with the facilities it offers for rest, recreation, and refreshment, be proving a boon alike to staff and workpeople. Bold in decorative scheme, the building is admirably lighted naturally and artificially, and throughout one is impressed by the atmosphere of cheerfulness and cleanliness. Very fitting, therefore, that these modern premises should be complete with gas service for heating, hot water supply, and cooking.

The central heating system, on the accelerated low pressure hot-water circulation principle, depends on a six-section "Rex" gas-fired boiler having a rating of 432,000 B.Th.U. per hour. The heating surface consists in the main of column-type radiators fitted with shields and concealed baffles at the back. The fresh air inlets are positioned behind the radiators, so that the air taken in is warmed in passing through the radiator and distributed into the room by baffle plates at a horizontal level. By the induced or "stack" effect the efficiency of the radiator is increased. This general heating is supplemented at the entrance doorways to the main dining hall (which has seating accommodation for 500) by two cabinet heaters of interesting design manufactured by C. A. Dunham Company, Ltd. These are fitted with three-speed motors driving fans circulating the air, passing it through a gilled heater battery and again delivering the warmed air well into the dining hall at a useful low level. These heaters, we were informed, have a very good psychological effect, giving a feeling of real comfort in cold weather to those entering the hall. The warmed air stream at the doorways effectively baffles any cold draughts at tables near this position.

Main Dining Hall in the New Canteen of the Bell Punch Company, Ltd., at Uxbridge.



Boiler and Storage for Hot Water Supply to Kitchen, &c.

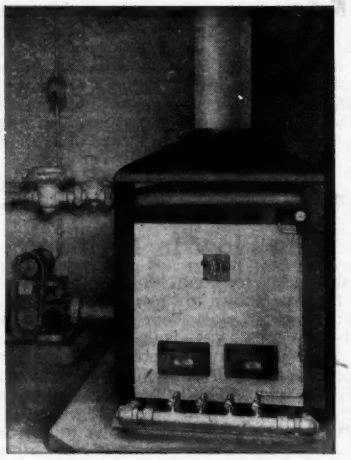
A water temperature thermostat is provided in the boiler to prevent this exceeding 190°F., while a room thermostat is provided which controls the supply of gas to the boiler to maintain a constant temperature in the building.

Hot Water Supply

By the use of gas it was possible to decentralize the hot water supply, providing one plant to serve points in the kitchen, scullery, vegetable preparation rooms, &c., and another set for the lavatories at the other end of the building, thereby avoiding long heat-losing secondary circuits. With a refined fuel like gas it is obviously more economical to take the fuel to the point where the heat is required rather than to convey warm water through heat-losing pipes.

A base-exchange water softener is fitted to the incoming water supply, reducing to 5° to 7° of hardness.

The kitchen apparatus presented a fairly constant load throughout the day. Therefore a boiler with a fairly high recovery rate was fitted. A two-section "D" series boiler is used having a recovery rate of 85 gallons per hour raised 80°F. connected to a 100-gallon insulated storage thermostatically controlled at 145°F. This serves nine sinks.



The Potterton Gas-fired Central Heating Unit.

In the lavatory section a peak load is experienced when the canteen is in use at lunch time, there being no draw-off during the working hours, as lavatories are available with their own gas-fired hot-water supply apparatus in the various parts of the works. For this the plant comprises a No. 20 "Victor" boiler with a recovery rate of 40 gallons per hour connected to a 120 gallon insulated storage.

The entire installation was carried out by Thomas Potterton (Heating Engineers), Ltd., and is a first-class gas heating job giving satisfaction to everybody concerned.

Public Ownership of the Gas Industry

Further Report of the Sub-Committee appointed by Special Committee of the Association of Municipal Corporations.

1. Our interim report* on the Post-War Planning of the Gas Industry of Nov. 10, 1943, was adopted by the Council at their meeting on March 2, 1944. In accordance with the instructions which we have received from the Special Committee, of which we are a Sub-Committee, we now beg to submit this further report on the question of the public ownership of the Gas Industry.

2. We were requested by the Special Committee to undertake the necessary research into the question of the public ownership of the Gas Industry. Although we have examined the published material available to us, we have not been able to undertake anything in the nature of the thorough and comprehensive investigation which is required. Our inability to do so is due to the insufficiency of available material, and to the existence of wartime restrictions which prohibit the publication of up-to-date statistics of the operation of gas undertakings.

3. It has now come to our notice that the Minister of Fuel and Power is appointing an advisory committee to advise him generally on the use of fuel, and that subsequently he will appoint another committee to advise him upon the proposals of the British Gas Federation and presumably upon our proposals. It would appear, therefore, that there will now be an independent and impartial enquiry into the Industry, and we hope that these committees will review all the financial, economic, and social factors involved.

4. In our consideration of the subject-matter of this report we have examined the latest available analyses of accounts published by the *Gas World* and the latest publications of *Field's Analysis* of the accounts of the principal gas undertakings, and find that on average the statistics are in many respects more favourable to local authorities than to companies. We must, however, frankly say that we are not satisfied that comparisons made on the figures in the publications mentioned are necessarily conclusive. Furthermore, nothing conclusive can be drawn from the appendices in the report on a Survey of the Gas Industry in Great Britain by the Post-War Planning Committee of the British Gas Federation. The particulars in those appendices include the pre-war demand on and the price charged by the undertakings listed. The particulars as to the prices charged, however, are merely the prices to "domestic credit consumers of 100 therms per annum in 1937," and such a limited range of prices cannot be used for the purpose of comparing company operation with local authority operation. Also, the report fails to give any facts as to the services rendered by the various undertakings to different types of consumers. A more reliable basis of comparison would be the total revenue per therm sold by undertakings grouped into comparable categories.

5. The future ownership of the Gas Industry forms part of the larger question of the future ownership of all public utility undertakings. In our opinion, Parliament will, sooner or later, be called upon to decide a major issue of principle as to whether profit-making companies should retain their ownership of part of the nation's public utility concerns, or whether such concerns should all be transferred to some form of public ownership. On this issue we reaffirm the policy of the Association of Municipal Corporations in regard to public utilities which, as stated in the Association's report on the Reorganization of Local Government adopted by a General Meeting of the Association on July 23, 1942, is that public utilities should, as a general statement, be owned and controlled by the public through the democratic forms of local government. Our present report is devoted in the main to consideration of the practical application of this policy.

6. In paragraphs 28 to 36 inclusive of our interim report we set out certain features of local authority ownership of public utilities which in our opinion support the view that the Gas Industry should be publicly owned. Furthermore, we consider that the Gas Industry of the future should be fully responsive to public opinion and the needs of all classes of consumers, and this feature is more likely to obtain under local authority ownership. All the factors involved in a reorganization of the Gas Industry are not economic, and the future organization of the Industry ought not to be considered without regard to all the social factors concerned and also the national policy upon the use of fuel.

7. It is, however, appreciated that the reorganization of the Gas Industry will be attended by many complex and difficult problems, and it may be that the wholesale transfer of the Industry to public ownership could not be carried out in a short space of time without the risk of some reduction in the ability of the Gas Industry to carry out the important duties which it will have to perform in the transition of industry generally from wartime to peacetime conditions. We therefore recommend that the matter should be dealt with on a long-term and a short-term basis.

8. In our view the policy of the Association of Municipal Corporations in regard to public utilities referred to in paragraph 5 above could well be taken as the long-term policy for the reorganization of the Gas Industry.

9. The policy of the Association of Municipal Corporations is that public utility undertakings should be owned by the public through the democratic forms of local government, but it is recognized that the present boundary areas of local authorities and the diversity in the size and location of the gas undertakings make it impracticable for some of the undertakings to be transferred to existing local authorities. We recognize also that there are some local authority gas undertakings which are so small that they could with advantage be amalgamated with other undertakings. It is appreciated that the reform of the local government structure, which most people recognize will have to be undertaken in the future, will have a profound bearing on the matter.

10. In order to overcome the problems arising from the small areas and scattered undertakings referred to above, we envisage, in certain localities, the joint ownership of gas undertakings by several local authorities formed into a joint gas board.

11. The pattern of local authority ownership cannot be uniform throughout the country. There are, however, many local authorities owning gas undertakings of a sufficient size and degree of efficiency to justify their continued existence in the hands of the present owners. There are also cases where a company owns a gas undertaking of sufficient size to be an economic unit supplying gas mainly in the area of one large or medium-sized local authority. In such cases the undertaking could be transferred to such local authority. On the other hand, the formation of joint gas boards might in some areas be found a convenient basis for the transfer to local authority ownership of a large company undertaking which supplies gas over the area of more than one large or medium-sized local authority. The gas supplies in some parts of the country are in the hands of a number of small local authority and company undertakings which for more efficient operation should be amalgamated into larger units. The constitution by the local authorities concerned of joint gas boards might be a convenient method of achieving both the necessary amalgamation and the transfer of the undertakings to local authority ownership.

12. Although the type of local authority ownership outlined above would be suited to many parts of the country, it is to be anticipated that certain areas may call for special consideration and, possibly, the formation of gas boards appointed by the Government to acquire the gas undertakings. In our view, this type of public ownership should only be adopted in localities where the difficulties of local authority ownership are so great that individual joint ownership or by local authorities would not be practicable.

13. If a long-term policy of this nature were laid down by Parliament the short-term reorganization of the Industry should be related to the long-term policy. The adoption of a long-term policy as a goal to be achieved as and when circumstances in any particular area permit does not, of course, solve immediately any of the present defects in the Gas Industry. The existence of a large number of small unrelated manufacturing units and the lack of co-operation in these cases on technical and commercial matters are two of the major defects from which the Industry is suffering. The object of the short-term policy should be to remove these defects wherever possible, and at the same time to progress towards the ultimate goal as represented by the long-term policy.

14. In our view, any attempt to reorganize the Industry by a process of voluntary evolution resulting in the perpetuation of gas companies and holding company interests in the Industry would fail to bring about any substantial improvement in the Industry. The existence of the dual system of public and private ownership as a permanent feature of the Industry would always be a barrier standing in the way of voluntary rationalization and co-operation.

15. The acquisition of the whole, or a controlling, interest in gas undertakings by holding companies is, in our opinion, calculated to make the process of rationalization all the more difficult. The policy of the holding companies, since their advent into the Gas Industry some ten years ago has been to acquire gas undertakings in various parts of the country, in some cases without much regard to the geographical contiguity of the undertakings purchased. For example, one holding company controls 18 very small undertakings with an average collective make of less than 9 million cu.ft. per annum scattered over 12 counties extending as far as Sussex, Anglesey, Carmarthenshire, and Cambridgeshire. Another has undertakings in Lancashire, Staffordshire, Nottinghamshire, Rutland, and Leicestershire. Yet another spreads its interest over Glamorganshire, Buckinghamshire, Bedfordshire, Yorkshire, Lancashire, Carmarthenshire, Cheshire, and Oxfordshire.

* See "JOURNAL" of January 5.

16. In some cases the undertakings which have been brought under the control of a holding company are in isolated districts which do not border upon the limits of supply of larger undertakings. On the other hand, there are cases where holding companies have acquired small gas undertakings which are situated in such close proximity to larger gas undertakings that the normal process of rationalization would demand that the larger undertaking should absorb the smaller undertaking controlled by the holding company. The fact that these small undertakings are now backed by the financial resources of the holding companies is likely to make the rationalization of the Gas Industry in its most economic and appropriate form exceedingly difficult, as the policy of the holding companies is more likely to be one of further acquisition than one of sale. If the holding company system is to be perpetuated it will result in the continuation of a large number of small gas undertakings which should be amalgamated with their neighbours.

17. It is argued in support of the holding company system that great benefits are bestowed upon the consumers of gas by the acquisition of small and, in some cases, inefficient gas undertakings by holding companies. It is true that with their financial resources, their ability to borrow money at lower rates of interest than a small gas undertaking, by more expert management, by the provision of better qualified technical, administrative and professional assistance, and by bulk purchasing on behalf of their subsidiaries, the holding companies are able to produce better results from a small gas undertaking than the previous owners were able to produce. Many of such owners were faced with difficulties, and possessed neither the resources nor the technical staff to enable them to overcome such difficulties.

18. On the other hand, the holding companies are able to lend money to their subsidiaries at an uncontrolled rate of interest. There is no control on the commissions they charge on purchases made for or services rendered to their subsidiaries. There is also the possibility of a holding company paying excessive prices for shares which they must acquire to obtain a controlling interest in an undertaking. These features of holding company control render possible the evasion of (*a*) the statutory provisions regulating rates of dividend and interest; (*b*) the periodical revision by Parliament of the company's powers which results from the necessity to apply periodically for increased authorized capital and borrowing powers; and (*c*) the regulation of the price of gas by reason of the fact that interest is charged before calculating dividends. A select committee of the House of Lords was sitting at the outbreak of war to consider these matters.

19. We consider, therefore, that pending the fulfilment of the long-term policy advocated in this report, holding companies should be placed under strict statutory control to prevent their carrying out any policy which might render the fulfilment of the long-term policy more difficult. As the possibility of the evasion of financial control over gas undertakings by holding companies is *sub judice* we refrain from commenting on it, beyond stressing our view that the matter calls for consideration at the earliest possible opportunity.

20. As a matter of short-term policy a great deal can be achieved to remove the existing defects in the Gas Industry by well-planned and controlled integration and co-operation between undertakings. In suitable cases there could be merger of contiguous undertakings. Other cases call for the concentration of the manufacture of gas in large well-balanced and economic manufacturing units, resulting in the bulk supply by the undertakings owning the manufacturing units to the other undertakers, who would continue to exist as distribution authorities. In our opinion, the advantages to be gained by centralizing the manufacture of gas should be shared by all the undertakings concerned.

21. Although the merger of geographically contiguous authorities is contemplated as part of the short-term policy, in no case should a local authority undertaking be transferred to a company, as any such step would tend to militate against the long-term policy we recommend. Where merger is to take place by the absorption of smaller local authority undertakings by larger local authority undertakings, provision should be made that the gas committee of the acquiring authorities shall include representatives of the local authorities whose undertakings are acquired. We consider, however, that wherever possible the identity of existing local authority undertakings should be preserved.

22. It is clear that if any reorganization of the Gas Industry is to take place on the lines suggested above, Parliament would have to pass legislation setting up machinery for the preparation of schemes to determine the requirements of each area, and to fix the dates by which the transfer of the Industry to public ownership should be completed in each area. The schemes so prepared should aim at bringing about at an early date such integration and co-operation among the undertakings in each area as can be achieved without causing any serious upheaval in the Industry. The schemes should also lay down the broad outlines of the long-term policy for each area, and should be subject to review so that they could be adjusted in light of any revision of local authority boundaries which might be brought about by future reforms in local government. It is recommended that the schemes should be provisional only until they are approved by Parliament. Legislation should define clearly the terms upon which undertakings would be transferred.

23. If the recommendations we make are adopted, certain of the company undertakings would be transferred to local authorities or gas boards within a relatively short period. Other company undertakings would be retained for a definite period, prescribed by a scheme on the expiration of which they would come under public ownership. We would urge that provision should be made for adequate representation on the boards of all retained companies of representatives of the local authorities within the companies' areas of supply. Such representation would, in our view, make the companies more responsive to public opinion, and would greatly facilitate the ultimate transfer of the companies to public ownership.

Towards a Better Understanding

A New Book for Schools

Few people know a great deal about the Gas Industry and most people know nothing at all about it. Yet everybody, men and women, girls and boys alike, ought to be reasonably informed—we would emphasize "reasonably"—of a large and expanding public service which enters in innumerable ways into daily life and work of the community in home and industry and in doing so helps enormously in the conservation of this country's most important economic asset. The varied activities of the Gas Industry are important, and it is in the national interest that attention should be drawn to them. How shall we set about an educative task designed to help the individual boy and the individual girl to gain an understanding of what our Industry means to them, or could mean to them, as a career, and what it does for them in home and industry?

On this matter, which we regard as vital from many points of view, the British Commercial Gas Association has got down to brass tacks. As part of what may be described as a campaign of education is the publication of a series of books telling the story of the Industry, each catering for a specific field and graded for a specific class of reader or hearer. We have before us the first of the series—a new text-book for schools,* a general introduction to what gas is and what it does. We have read every word of this new publication, which comprises twelve simple lessons for the use of teachers, and we are remarkably favourably impressed by basic idea, by the undoubted accuracy of the information imparted, by the originality of presentation, by its clarity, simplicity, directness, and welcome absence of "padding." We are told in the introduction that the book was written by a teacher for other teachers. Any teacher of general knowledge classes reading, handling, and using this book—and shortly we hope there will be thousands of such teachers doing so—will quickly appreciate, we feel sure, just how much experience, vividness of context, and happy style of expression are helping him and his classes towards the better understanding we have in mind.

In peacetime we should have hailed this new B.C.G.A. publication as being outstanding in its "fitness for purpose"; it does what it sets out to do. We regard its entry into the educative sphere at the close of five years of an unfinished war as being all the more remarkable. Distribution of copies by gas undertakings to schools, technical institutes, youth organizers, lecturers, and so on cannot fail to help the Gas Industry's endeavour to extend and better its service. The B.C.G.A. is, we think, to be congratulated on producing on such practical lines a book of the kind at a very modest price—a price within the reach of all. We strongly advise gas undertakings throughout the country to know *Gas: What it is: What it does.*

* *Gas: What it is: What it does.* Notes for Teachers on Town Gas. Twelve simple lessons dealing with the manufacture, distribution, and utilization of gas. In addition to 38 illustrations in white on black for blackboard reproduction or use in the epidiascope, there are many diagrammatic illustrations in black on white. Price 4s. 6d. per copy.

National Federation of Gas Coke Associations.—On p. 206 of the August 16 issue of the "JOURNAL" we gave the names of the members of the National Technical Committee. The name of the Chairman, Colonel H. C. Smith, was unfortunately omitted.

The Autumn Meeting of the Southern Association of Gas Engineers and Managers will be held at Grosvenor House, Park Lane, London, under the Presidency of Mr. R. C. Taylor (Torquay), on Oct. 11, at 2.30 p.m., when Dr. F. J. Dent, D.Sc., Ph.D., Assistant Director, Gas Research Board, will present a Paper entitled "The Complete Gasification of Coal." The General Committee meeting will be held at 11.30 a.m.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

GAS PRODUCTS PRICES—STOCKS AND SHARES

The London Market Aug. 28.

A Government Order came into effect on March 1 controlling the price of Benzole and Coal Spirit and replacing the Control of Coal Tar Naphtha and Xylole Order, 1943.

The Order is known as the Control of Benzole and Coal Spirit Order, 1944 (S.R. & O. 1944, No. 172).

By this Order the price of Motor Benzole is fixed at 2s. per gallon. The Order also lays down the method of evaluating Crude Benzole.

The Order also calls for periodical returns to the Ministry of Fuel and Power from all producers of Crude and Refined Benzole.

The only item of interest in connexion with the Coal Tar products market is the issue of Government Order designated the Control of Toluene (No. 4) Order, 1944 (S. R. & O. 1944, No. 170), which contains an amendment of the Control of Toluene (No. 3) Order, 1943.

Prices of Coal Tar products are unchanged.

The Provinces Aug. 28.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 1s. 11d. to 2s. 1d., pure, 2s. 7½d. (controlled by the Control of Toluene No. 3 Order, dated July 14, 1943, operative from July 20, 1943). Benzole and Coal Spirit, also Coal Tar Naphtha and Xylole, are now controlled by the Control of Benzole and Coal Spirit Order, 1944, dated Feb. 18, 1944, S. R. & O. 1944, No. 172, operative from March 1. Carbolic acid, 60's, naphthalene, anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.), and strained anthracene oil controlled by the Coal Tar Products Prices Order, 1943, dated Oct. 20, 1943 (S. R. & O. 1943, No. 1528), operative from Nov. 15, 1943.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Scotland Aug. 26.

Throughput is steady but spot business is slow. Refined tar*: Yield to distillers is 4½d. per gallon *ex* Works, naked. Creosote oil: Timber preserving quality* 5½d. to 6½d.; hydrogenation oil,* 5⅞d.; low gravity or virgin oil,† 7½d. to 7½d.; benzole absorbing oil,* 6½d. to 8d. per gallon. Refined cresylic acid* is 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha†: 6½d. to 7d. per gallon. Solvent naphtha*: Basic prices delivered in bulk, 90/160 grade, 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 2d. per gallon. Pyridine†: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

* Price controlled. † Uncontrolled.

Despite the excellent war news, conditions at the opening last week continued dull, but towards the close a rally set in among industrial equities and most of the leaders made small recoveries.

There was more activity among gas stocks and shares than for some time past, but with very few exceptions this had little effect on prices, which remained at the previous week's levels. A feature was the continued strength of Imperial Continental Ordinary, which closed on Thursday last showing a gain of 11 points on the week. Apart from a number of the usual half-yearly *ex div.* markings, the only other change was the slight setback in Gas Light units.

The following quotations were changed or marked *ex div.* during the week:

SUPPLEMENTARY LIST

Croydon 4 p.c. Pref. (x.d.)	95—100	Aug. 21
Mid-Southern Utility "A" Cons. (x.d.)	105—110	,,

PROVINCIAL EXCHANGES

Hartlepool 5 p.c. max. (x.d.) ...	91—93	Aug. 21
Preston "A" (x.d.)	170—175	Aug. 14
,, "B" (x.d.)	132—135	,,
Weston-Super-Mare (x.d.)	110½—112½	,,

OFFICIAL LIST

Bournemouth 7 p.c. max. (x.d.) ...	155—160	Aug. 21
British 5½ p.c. "B" Cum. Pref. ...	109—114	+1
Commercial 5 p.c. Deb. (x.d.) ...	110—115	Aug. 21
Croydon Sliding Scale (x.d.)	121—126	,,
Ditto max. div. (x.d.)	105—108	,,
Gas Consolidation "A" (x.d.) ...	21/3—22/3	,,
Ditto "B" (x.d.)	19/—21/—	,,
Gas Light Units	21/9—22/9	—/6d.
Imperial Continental Ord.	113—118	+11
Liverpool Ord. (x.d.)	112—115	Aug. 31
Mid-Southern Utility "C" (x.d.) ...	103—108	,,
Ditto 4 p.c. Cum. Pref. (x.d.) ...	95—100	,,
South-Eastern Gas Corporation Ord. (x.d.)	20/3—21/3	,,
Ditto 4½ p.c. Red. Cum. Pref. (x.d.)	20/3—21/3	,,
Ditto 4 p.c. Cum. Pref. (x.d.) ...	19/6—20/6	,,
South Metropolitan 6 p.c. Pref. (x.d.)	122—127	,,
Ditto 4 p.c. Pref. (x.d.)	92—97	,,

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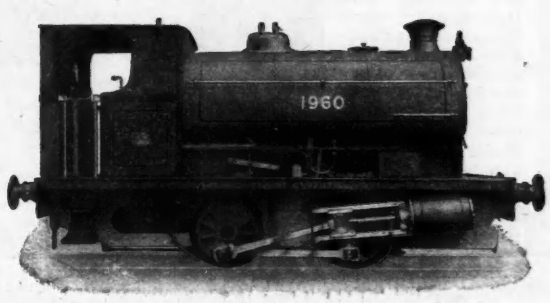
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